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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,808	11/12/2003	Blake A. Simmons	SANDIA-2 (SD-8485)	7853
54520	7590	10/17/2006	EXAMINER	
MICHALESON & ASSOCIATES			WOLLSCHLAGER, JEFFREY MICHAEL	
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1732

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/712,808

Applicant(s)

SIMMONS ET AL.

Examiner

Jeff Wollschlager

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/12/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I, claims 1-11 in the reply filed on September 15, 2006 is acknowledged. Claims 12-21 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 7 are indefinite because the recitation "surface diffusion zone" is unclear as to its limiting effect. The examiner notes that in the claims the "surface diffusion zone is adjacent" a surface (emphasis added). It is unclear whether the adjacent surface diffusion zone is contained within/inward the surface of the workpiece in accord with the definition of the "surface diffusion zone" provided within the specification (e.g. U.S. Patent Application Publication 2005/0100712; Figures 2C, paragraphs [0016, 0030, 0031, and 0036]) or whether the adjacent position of the created surface diffusion zone could merely be on the external surface of a workpiece with no diffusion of the polymerizable material within/into the workpiece.

Claims 2 and 8 are indefinite because the recitation "microfeature" is unclear as to its limiting effect. Claims 3 and 9 are indefinite because the recitation "high performance engineered plastic" is unclear as to its limiting effect.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Unger et al. (U.S. Patent Application Publication 2001/0054778; published December 27, 2001).

Regarding claim 1, Unger et al. teach a method of joining plastic comprising: a) creating a first surface diffusion zone containing therein a first polymerizable material, wherein said first surface diffusion zone is adjacent a first surface of a first workpiece; b) creating a second surface diffusion zone containing therein a second polymerizable material, wherein said second surface diffusion zone is adjacent to a second surface of a second workpiece, and wherein said first polymerizable material and said second polymerizable material are capable of bonding with each other; and, c) bringing said first surface and said second surface into intimate contact at a bonding surface; and d) causing said first polymerizable material and said second polymerizable material to react and join across said bonding surface (Abstract; paragraphs [0012, 0141, 0142, 0147, 0148])

As to claim 2, Unger et al. teach at least one of said surfaces contains at least one microfeature (Title, paragraphs [0007, 0010]).

As to claim 3, Unger et al. employ high-performance engineered plastics (paragraphs [0156, 0158, 0173]).

Regarding claim 7, Unger et al. teach a method of joining plastic comprising: a) creating a first surface diffusion zone containing therein a polymerizable material, wherein said first surface diffusion is adjacent to a first joining surface of a first workpiece; and, b) providing a second workpiece having a second joining surface; and, c) bringing said first joining surface and said second joining surface into intimate contact at a bonding surface; and, d) causing said polymerizable material to react and join across said bonding surface (paragraphs [0012, 0141, 0142, 0147, 0148]).

As to claim 8, Unger et al. teach at least one of said surfaces contains at least one microfeature (Title, paragraphs [0007, 0010]).

As to claim 9, Unger et al. employ high-performance engineered plastics (paragraphs [0156, 0158, 0173]).

Claims 1-3 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Soane et al. (U.S. Patent 6,176,962; issued January 23, 2001).

Regarding claim 1, Soane et al. teach a method of joining plastic comprising: a) creating a first surface diffusion zone containing therein a first polymerizable material, wherein said first surface diffusion zone is adjacent a first surface of a first workpiece; b) creating a second surface diffusion zone containing therein a second polymerizable

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material, wherein said second surface diffusion zone is adjacent to a second surface of a second workpiece, and wherein said first polymerizable material and said second polymerizable material are capable of bonding with each other; and, c) bringing said first surface and said second surface into intimate contact at a bonding surface; and d) causing said first polymerizable material and said second polymerizable material to react and join across said bonding surface (Abstract; col. 3, lines 13-18 and 47-50; col. 7, lines 20-28; col. 8, lines 11-18 and 25-27 and 35-39; col. 10, lines 4-26; col. 11, lines 57-col. 12, line 6; col. 13, lines 46-49; col. 14, lines 9-11).

As to claim 2, Soane et al. teach at least one of said surfaces contains at least one microfeature (Abstract).

As to claim 3, Soane et al. employ high-performance engineered plastics (Abstract; col. 10, lines 10-14).

Regarding claim 7, Soane et al. teach a method of joining plastic comprising: a) creating a first surface diffusion zone containing therein a polymerizable material, wherein said first surface diffusion is adjacent to a first joining surface of a first workpiece; and, b) providing a second workpiece having a second joining surface; and, c) bringing said first joining surface and said second joining surface into intimate contact at a bonding surface; and, d) causing said polymerizable material to react and join across said bonding surface (Abstract; col. 3, lines 13-18 and 47-50; col. 7, lines 20-28; col. 8, lines 11-18 and 25-27 and 35-39; col. 10, lines 4-26; col. 11, lines 57-col. 12, line 6; col. 13, lines 46-49; col. 14, lines 9-11).

As to claim 8, Soane et al. teach at least one of said surfaces contains at least one microfeature (Abstract).

As to claim 9, Soane et al. employ high-performance engineered plastics (Abstract; col. 10, lines 10-14).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4-6, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soane et al. (U.S. Patent 6,176,962; issued January 23, 2001) as applied to claims 1-3 and 7-9 above, and further in view of Kawazoe et al. (WO 03/070623; published August 28, 2003) and/or Stokich et al. (U.S. Patent 6,184,284;

issued February 6, 2001) and/or White et al. (U.S. Patent 4,824,500; issued April 25, 1989).

It is noted that U.S. Patent Application Publication 2005/0249637 is employed as the English translation of WO 03/070623. Citations to Kawazoe et al. are drawn from the U.S. Publication.

Regarding claims 4-6, 10 and 11, Soane et al. teach the method of claim 3 as discussed in the 102(b) rejection above. Soane et al. do not explicitly elaborate as to all the combinations of conventional plastics and conventional polymerizable materials that may be employed. However, in analogous joining/bonding methods, Kawazoe et al, Stokich et al., and White et al. each taken individually or in combinations with each other teach and suggest the claim limitations.

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to employ the conventional polymers and conventional polymerizable materials, as taught and suggested by Kawazoe et al, Stokich et al., and White et al., together with the method of Soane et al. for the purpose as taught by Kawazoe et al. of making a product suited for its purpose (paragraph [0034]), or as taught by White et al. for providing a binder which cures at low temperatures and has the required cure strength (col. 1, lines 46-51) or as taught by Stokich et al. to provide an adhesion promoter which reduces water absorption (col. 1, lines 38-59).

Specifically, as to claims 4 and 10, Kawazoe et al., for example, show the known equivalence of PMMA, as specifically employed by Soane et al., with PEEK, PPS, and

PEI (paragraphs [0030, 0034]), in similar microfluidic applications. As suggested by Kawazoe et al, the ordinarily skilled artisan would choose the material "depending on a purpose" (paragraph [0034]).

As to claims 5 and 11, Stokich et al. (col. 1, lines 65- col. 2, lines 4; col. 2, lines 17-35 and 46-52; col. 14, lines 11-20; col. 15, lines 28-43) and White et al. (col. 5, lines 40-57; and col. 8, lines 8-14) for example, disclose that various polymers may be employed, and styrene and divinylbenzene, alone or together, may be employed as polymerizable materials.

As to claim 6, White et al., for example, employ styrene and divinylbenzene analogously in a ratio of 9:1 (col. 8, lines 6-14).

Claims 4-6, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Unger et al. (U.S. Patent Application Publication 2001/0054778; published December 27, 2001) as applied to claims 1-3 and 7-9 above, and further in view of Kawazoe et al. (WO 03/070623; published August 28, 2003) and/or Stokich et al. (U.S. Patent 6,184,284; issued February 6, 2001) and/or White et al. (U.S. Patent 4,824,500; issued April 25, 1989).

It is noted that U.S. Patent Application Publication 2005/0249637 is employed as the English translation of WO 03/070623. Citations to Kawazoe et al. are drawn from the U.S. Publication.

Regarding claims 4-6, 10 and 11, Unger et al. teach the method of claim 3 as discussed in the 102(b) rejection above. Unger et al. do not explicitly elaborate as to all

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the combinations of conventional plastics and conventional polymerizable materials that may be employed. However, in analogous joining/bonding methods, Kawazoe et al, Stokich et al., and White et al. each taken individually or in combinations with each other teach and suggest the claim limitations.

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to employ the conventional polymers and conventional polymerizable materials, as taught and suggested by Kawazoe et al, Stokich et al., and White et al. together with the method of Unger et al. for the purpose as taught by Kawazoe et al. of making a product suited for its purpose (paragraph [0034]), or as taught by White et al. for providing a binder which cures at low temperatures and has the required cure strength (col. 1, lines 46-51) or as taught by Stokich et al. to provide an adhesion promoter which reduces water absorption (col. 1, lines 38-59).

Specifically, as to claims 4 and 10, Kawazoe et al., for example, show the known equivalence of PMMA, as specifically employed by Kawazoe et al., with PEEK, PPS, and PEI (paragraphs [0030, 0034]), in similar microfluidic applications. As suggested by Kawazoe et al, the ordinarily skilled artisan would choose the material "depending on a purpose" (paragraph [0034]).

As to claims 5 and 11, Stokich et al. (col. 1, lines 65- col. 2, lines 4; col. 2, lines 17-35 and 46-52; col. 14, lines 11-20; col. 15, lines 28-43) and White et al. (col. 5, lines 40-57; and col. 8, lines 8-14) for example, disclose that various polymers may be

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employed, and styrene and divinylbenzene, alone or together, may be employed as polymerizable materials.

As to claim 6, White et al., for example, employ styrene and divinylbenzene analogously in a ratio approximately 9:1 (col. 8, lines 6-14).

Conclusion

All claims are rejected.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Wollschlager whose telephone number is 571-272-8937. The examiner can normally be reached on Monday - Thursday 7:00 - 4:45, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JW

Jeff Wollschlager
Examiner
Art Unit 1732

October 5, 2006


CHRISTINA JOHNSON
PRIMARY EXAMINER
10/12/06